
वस्त्रादि — बूनी एवं रंगी हुई पुट्टी — विशिष्टि
(पहला पुनरीक्षण)

**Textiles — Knitted Puttees, Dyed —
Specification**

(*First Revision*)

ICS 59.060.10, 59.080.30

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Price Group 6

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

Puttee is a cloth strip used as a kind of gaiter or legging for wrapping around the ankle and the leg by soldiers, riders, etc puttees which are rendered water-repellent are used in snow-covered regions.

This standard, first published in 1967. This standard has been revised again to incorporate the following major changes:

- a) Title of the standard has been modified;
- b) The amendment issued has been incorporated; and
- c) Sampling and criteria for conformity has been modified.

The composition of the Committee responsible for the formulation of this standard is listed in Annex C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard***TEXTILES — KNITTED PUTTEES, DYED — SPECIFICATION***(First Revision)***1 SCOPE**

1.1 This standard prescribes the constructional details and other particulars of knitted puttees, dyed.

1.2 This standard does not prescribe general appearance, colour, type of finish, feel, etc, of puttees (*see* also **5.3**).

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in Annex A.

3 TERMINOLOGY

For the purpose of this standard, the definitions as given in IS 3596 shall apply.

4 GENERAL REQUIREMENTS**4.1 Yarn**

Two worsted yarns of approximately 44 tex (20 s worsted count) for knitting and one woollen yarn of approximately 160 tex (12 s Yorkshire woollen count, *see* Note) for laying-in, shall be used for making the basic material for puttees. They shall be spun from not lower than 50 s quality wool or 50 s quality wool blended with man-made fibres in proportions as agreed to between the buyer and the seller [*see* Item (v) of Table 2].

NOTE — Woollen Yorkshire = Number of 256 yd skeins in a pound. To convert woollen Yorkshire to tex, divide 1 938 by the 'woollen Yorkshire count'.

4.2 Knitted Fabric

Dyed yarns of the required shade shall be used in knitting the puttees. The knitted fabric shall be

milled to achieve the required degree of cover and firmness and shall be rendered moth-proof, and water-repellant if agreed to between the buyer and the seller.

4.3 Cotton Tape

Cotton tape in the puttee shall be of the best trade quality as agreed to between the buyer and the seller. The tape shall be dyed to the shade as that of the puttee. The free end of the tape shall be turned in to a depth of 0.5 cm and stitched securely (*see* Fig. 1) or cut to a serrated edge or shallow-tail shape to avoid fraying of the cut edge.

4.4 Stitching

4.4.1 All sewings shall be done with lock stitches.

4.4.2 For all stitches, cotton sewing thread of approximately 25 tex \times 3 (cotton count 24s/3) or 9.8 tex \times 6 (cotton count 60s/6), preferably conforming to Variety No. 6 or 16 respectively of IS 1720, shall be used. It shall be of the same colour as that of the puttee.

4.4.3 In shape the puttees shall be generally as shown in Fig. 1.

4.4.4 The puttees shall be tailored neatly out of the knitted fabric (*see* **4.2**) and cotton tape (*see* **4.3**). The wales shall run along the length of the puttees.

5 SPECIFIC REQUIREMENTS**5.1 Varieties**

The puttees shall be of 3 varieties, as prescribed in Table 1. The dimensions and weight of puttee shall conform to the relevant requirements of Table 1, when read with Fig. 1.

5.2 Other Requirements

Puttees shall conform to the other requirements given in Table 2.

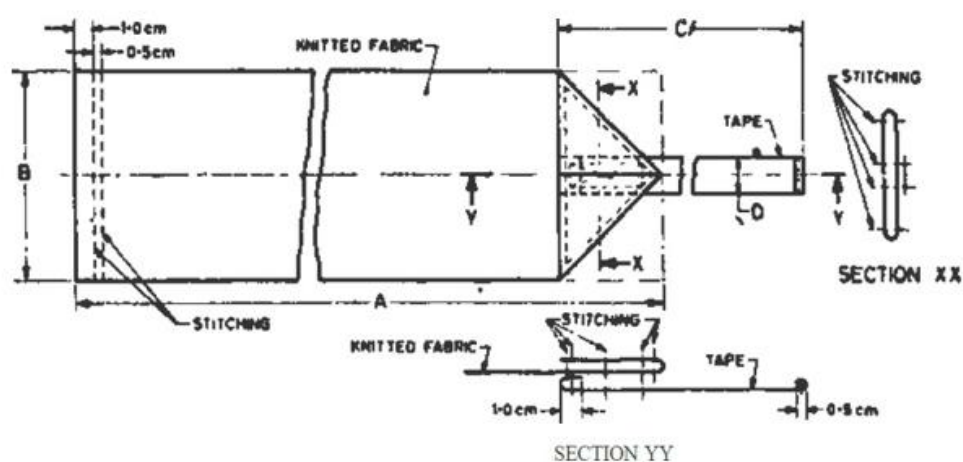


FIG. 1 A TYPICAL PUTTEE (WITH TAPE EDGE STITCHED)

Table 1 Dimensions and Weight of Puttees
(Clause 5.1 and Fig. 1)

SI No.	Variety	Dimensions, cm				Weight per 10 Pairs of Puttees, kg, Min
		A	B	C	D	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	P ₁	100	11.5	115	2.0	1.500
ii)	P ₂	275	11.5	150	2.0	4.250
iii)	P ₃	325	11.5	150	2.0	5.125
iv)	Tolerance	± 3	± 0.5	± 3	± 0.3	—

NOTES

1 To be determined by the method prescribed in IS 1954 Methods for determination of dimensions of fabrics.

2 To be determined by the method prescribed in A-3.

5.3 Sealed Sample

If, in order to illustrate or specify the general appearance, colour, type of finish, feel, etc., of puttees, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

5.3.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

Table 2 Other Requirements of Puttees
(Clause 5.2)

SI No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	a) Breaking load of fabric (fullwidth \times 20 cm) b) Elongation of fabric at the time of rupture	50 kg, <i>Min</i> 30 percent, <i>Min</i>	IS 1969
ii)	Water absorption [for puttees rendered water-repellant (<i>see</i> Note)]	75 percent, <i>Max</i>	B-4
iii)	Colour fastness to: a) Artificial Light, change in colour b) Washing: Test A (1) i) Change in colour ii) Staining of adjacent fabric c) Perspiration: i) Change in colour ii) Staining of adjacent fabric	4 or better 4 or better 4 or better 4 or better 4 or better	IS/ISO 105-B01 or IS/ISO 105-B02 IS/ISO 105-C10 IS/ISO 105-E04
iv)	Composition and proportion of fibres in puttees (for puttees made of wool blended with man-made fibres)	As agreed to between the buyer and the sellerseller	IS 2006

NOTE — If agreed to between the buyer and the seller, the puttees shall be rendered water-repellant also.

6 MARKING

6.1 A cloth label of suitable size shall be securely stitched to each puttee near the end of the tape on which shall be indicated the following:

- Variety of puttee (such as P1 P2, or P3);
- Manufacturer's name, initials or trade-mark, if any;
- Year of manufacture;
- The letters 'MP', if moth-proofed; and
- Any other information/instruction provided by the manufacturer/required under law.

6.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

7 PRESERVATION

The puttees shall be preserved with the heavy dose of naphthalene, using a minimum quantity of 5 kilograms per cubic metre of the volume of the bale.

8 PACKING

8.1 Unless otherwise agreed to between the buyer and the seller, make a bundle of 10 pairs of puttees and wrap them in kraft paper conforming to the

requirements of grade 2 of IS 1397. Tie the bundle with cotton or jute twine of suitable quality at least at two places to make a bundle.

8.2 Place the required number of bundles as prepared in 8.1 on the table of a baling press over layers of packing materials listed below:

- Polyethylene film conforming to the requirements of grade 1, grade 2, grade 3 of IS 2508. or the waxed paper; and
- Heavy cee cloth conforming to the requirements of IS 3751.

Place similar layers of packing materials over the top of the arranged bundles. The packing materials shall be in sound, clean and dry condition and shall be of sufficient size to cover the bundles with adequate overlaps on all sides.

8.2.1 The gross weight of the bale shall not exceed 35 kg.

8.3 Press the bale to make it sufficiently rigid so that it does not itself sag nor its contents slip.

8.3.1 When the bale is still under pressure, sew heavy cee cloth with 3-ply double jute twine of adequate strength taking care not to pierce the inner wrapping during sewing. Bind the bale at right angles to its length and width with flat steel strips (or hoops).

NOTE — Puttees of same variety should be packed in one bale.

8.4 Each bale shall be marked with the following information leaving adequate space for marking by railways or postal authorities:

- a) Material;
- b) Variety packed (for example, P1, P2 or P3);
- c) Number of pairs packed in a bale;
- d) Gross weight of bale in kg;
- e) Year of manufacture;
- f) The letters 'MP', if moth-proofed;
- g) Manufacturer's name, initials or trade-mark, if any;
- h) Name and address of the consignee; and
- j) Any other information required by the buyer or by the law in force.

9 SAMPLING

9.1 Lot

All the puttees of the same variety, colour and treated similarly for moth-proofing, delivered to a buyer against one dispatch note shall constitute a lot.

9.2 Each lot shall be tested separately to ascertain its conformity with the requirements of this standard.

9.3 Unless otherwise agreed to between the buyer and the seller the number of bundles to be selected from a lot shall be in accordance with col (2) of Table 3.

9.4 For the purpose of determining the weight, all the 10 pairs of puttees in each of the bundles, selected according to **9.3** shall constitute the test specimen.

9.5 For determining dimensions, the number of pairs of puttees specified in col (4) of Table 3 shall be selected at random from the bundles selected in **9.3**. Each puttee so selected shall constitute the test specimen.

9.6 For determining breaking load and elongation, water absorption, and colour fastness, the number of pairs of puttees specified in col (6) of Table 3 shall be selected at random from those tested for dimensions (*see 9.5*). All the pairs so selected shall constitute the test sample.

9.6.1 For the purpose of determining:

- a) composition and proportion of fibres in puttees (for puttees made of wool blended with man-made fibres) at least two composite specimens shall be tested.

9.7 Criteria for Conformity

A lot shall be considered as conforming to this standard if the following conditions are satisfied:

- a) In respect of weight, each of the observed values satisfies the requirements specified in Table 1;
- b) In respect of dimensions, the number of puttees failing to satisfy the requirements of Table 1 does not exceed the applicable number specified in col (5) of Table 3; and
- c) In respect of requirements enumerated in **9.6**, each of the observed values satisfies the relevant requirement of Table 2.

Table 3 Sample Size and Criteria for Conformity
(Clauses 9.3, 9.5 and 9.6)

Sl No.	Numbers of Bundles in the Lot	Number of Bundles to be Selected	Non-Destructive Testing		Number of Pairs of Puttees to be Selected for Destructive Testing
			Number of Pairs of Puttees to be Selected	Permissible Number of Non-conforming Puttees	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Up to 25	3	0	1	5
ii)	26 - 100	5	10	2	5
iii)	101 - 150	8	10	3	10
iv)	151 - 300	13	20	5	10
v)	301 and above	20	40	7	10

ANNEX A

(Clause 2)

LIST OF REFERRED STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
IS 1397 : 2020	Kraft paper for packing and wrapping — Specification (<i>third revision</i>)	IS 3751 : 1993	Textiles — Heavy jute cloth — Specification (<i>first revision</i>)
IS 1720 : 1978	Specification for cotton sewing threads (<i>first revision</i>)	IS 6359 : 1971	Method for conditioning of textiles
IS 1954 : 1990	Determination of length and width of woven fabrics — Methods (<i>second revision</i>)	IS/ISO 105-B01 : 2014	Textiles — Tests for colour fastness: Part B01 Colour fastness to light: Daylight
IS 1969 (Part 1) : 2018	Textiles — Tensile properties of fabrics: Part 1 Determination of maximum force and elongation at maximum force using the strip method (<i>fourth revision</i>)	IS/ISO 105-C10 : 2006	Textiles — Tests for colour fastness: Part C10 Colour fastness to washing with soap or soap and soda
IS 2508 : 2016	Polyethylene films and sheets — Specification (<i>third revision</i>)	IS/ISO 105-B02 : 2014	Textiles — Tests for colour fastness: Part B02 Colour fastness to artificial light: Xenon arc fading lamp test
IS 2006 : 1988	Method for quantitative chemical analysis of binary mixtures of protein fibre with certain other non-protein fibres (<i>second revision</i>)	IS/ISO 105-X12 : 2016	Textiles — Tests for colour fastness: Part X12 Colour fastness to rubbing (<i>first revision</i>)
IS 3596 : 1967	Glossary of terms relating to hosiery	IS/ISO 105-E04 : 2013	Textiles — Tests for colour fastness: Part E04 Colour fastness to perspiration (<i>first revision</i>)

ANNEX B
(Tables 1 and 2)

METHODS OF TEST

B-1 CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

The test specimens shall be tested in prevailing atmospheric conditions. In case of dispute, the samples shall be conditioned and tested in standard atmosphere as given in IS 6359.

B-2 QUALITY OF REAGENTS

Unless specified otherwise pure chemicals shall be employed in test and distilled water (*see* IS 1070) shall be used where the use of water or distilled water as a reagent is intended.

NOTE — 'Pure chemicals' mean chemicals that do not contain impurities which affect the test results.

B-3 WEIGHT

Take each test specimen constituting 10 pairs of puttees (*see* 7.4). Condition them to moisture equilibrium in a standard atmosphere (*see* B-1) and determine the collective weight of all the 10 pairs of puttees.

B-4 WATER ABSORPTION

B-4.1 Test Specimens

Cut 3 pieces measuring 10 cm × 10 cm from different places of a puttee from the test sample (*see* 7.6) so that they represent the puttee as fully as possible. Each piece shall constitute a test specimen.

B-4.2 Condition the test specimen (*see* B-1). Weigh

each test specimen in an air-tight container.

B-4.3 Place each specimen gently on the surface of water maintained at 40 °C temperature in a shallow tray. Keep the specimen floating on the surface of the water.

B-4.4 At the end of half an hour, if the specimen still floats on the surface (*see* Note) remove the test specimen from the tray. Remove excess of water adhered loosely on the surface by pressing it against a blotting paper.

NOTE— If the specimen sinks in the water, it shall be held to have failed the test.

B-4.5 Weigh each test specimen in an air-tight container and calculate percentage of water held by the following formula:

$$A = \frac{W_2}{W_1} \times 100$$

where

A = percentage of water absorbed;

W₂ = weight in grams of water absorbed;
and

W₁ = original weight in grams of the test specimen.

B-4.5.1 Similarly calculate the percentage of water absorbed by each of the remaining two specimens cut from a puttee. Calculate the mean of the three values.

ANNEX C
(Foreword)

COMMITTEE COMPOSITION

Hosiery Sectional Committee, TXD 10

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The South India Textile Research Association, Coimbatore	DR PRAKASH VASUDEVAN (Chairperson)
Apparel Export Promotion Council, Gurugram	SHRI K. S. BISHT
Central Reserve Police Force, New Delhi	SHRI SANJEEV KUMAR SINGH SHRI RANDHIR KUMAR JHA (<i>Alternate</i>)
DKTE Centre of Excellence in Nonwovens, Ichalkaranji, Maharashtra	PROF UDAY J. PATIL SHRI ANIL U. USAWARE (<i>Alternate</i>)
Defence Materials and Stores Research and Development Establishment, Kanpur	SHRI ASHOK KUMAR YADAV
Directorate General of Quality Assurance, Ministry of Defence, New Delhi	SHRI ARVIND KAMTHANE SHRI J. K. YADAV (<i>Alternate</i>)
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JKR Garments, Tirupur	SHRI JAILANI
Knitwear & Apparel Manufacturers Association, Ludhiana	SHRI SUDARSHAN KUMAR JAIN SHRI ARUN AGGARWAL (<i>Alternate</i>)
NIFT-TEA College of Knitwear Fashion, Tirupur	DR K. P. BALAKRISHNAN DR P. P. BALAKRISHNAN (<i>Alternate</i>)
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The Synthetic and Rayon Textiles Export Promotion Council, Mumbai	SHRI ANIL RAJVANSHI SHRI BHADRESH M. DHODIA (<i>Alternate</i>)
Tiruppur Exporters Association, Tiruppur	SHRI T. R. VIJAYKUMAR
Veermata Jijabai Technological Institute, Mumbai	SHRI S. P. BORKAR DR ARVIND BHONGADE (<i>Alternate</i>)

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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